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Drill Regulations

FOR

Machine-Gun Organizations

CAVALRY

89

1910

UNITED STATES OF AMERICA
WAR OFFICE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1910

WAR DEPARTMENT

Document No. 377

OFFICE OF THE CHIEF OF STAFF

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF,
Washington, August 15, 1910.

The following Drill Regulations for Machine-Gun Organizations Cavalry are approved and published for the information and idance of the Regular Army and the Organized Militia of the nited States. So much of these drill regulations as pertains to e troop shall be applicable only in the case of provisional maine gun troops organized as provided in paragraph 25, Field ervice Regulations, United States Army, 1910, and where reference made to first sergeants, trumpeters, cooks, farriers, horseshoers, ddlers, or wagoners, the duties and functions assigned to each all be taken by the noncommissioned officer or private acting as ch.

The provisions of these regulations are to take effect January 1, 11.

By Order of the Secretary of War:

LEONARD WOOD,
Major-General, U. S. Army,
Chief of Staff.

9-23-32

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RILL REGULATIONS MACHINE-GUN ORGANIZATIONS, CAVALRY, 1910.

1. It is presumed that members of a cavalry machine-gun organi-
ation are primarily cavalrymen and have been instructed as such.
nly such definitions, signals, etc., are here given as are not given
Cavalry Drill Regulations. All members of a machine-gun
rganization receive instruction in all that pertains to the machine
un or its equipment.

DEFINITIONS.

2. *Fire direction,* or employment of fire, is a general term em-
racing the various steps, including tactical disposition, which
nable the commander of one or more fire units to bring an effective
re to bear upon the desired target at the proper time. It pertains
specially to preparation of fire.

Fire control, or conduct of fire, is the exercise by a commander,
ver his fire unit or units, of that power which enables him to regu-
ate the fire in obedience to his will. It pertains especially to the
echnicalities immediately involved in delivery of fire.

Fire discipline is that condition of the personnel of a fire unit, re-
ulting from training and practice, which enables the commander
o obtain an orderly and efficient delivery of fire.

Laying is the process of pointing a gun for range and direction so
s to cause an assumed trajectory to pass through the target.

Right and *Left.* When the terms *right* and *left* are used, it is con-
idered that the right or left of the element addressed is meant, as:
he right of the pointer; the right of the section.

COMMANDS AND SIGNALS.

COMMANDS.

3. Chiefs of platoon repeat the commands of the captain or g appropriate commands to their platoons in time to insure the pro execution of the movement. If a chief of platoon does not hea command, he governs himself by what he sees executed by t adjoining platoon.

4. Chiefs of section repeat the commands of the chiefs of plato or give appropriate commands to their sections in time to insure t proper execution of the movement.

SIGNALS.

5. Signals may be used alone or in conjunction with ver commands or trumpet signals.

6. Signals are ordinarily made with the right arm, but may made with the left arm when more convenient; when made wi the left arm the reins are taken temporarily into the right han If the saber be drawn, the signals are made in a manner similar that prescribed for the arm, the command of execution being ma by extending the arm vertically and then returning to the *p saber.*

7. Ordinarily, before making a signal for the execution of movement, the commander places himself where he can be seen the organization, generally with his horse facing in the same dir tion as the organization, and commands or signals the *attention* causes it to be sounded on the trumpet.

The signals prescribed for the different movements are *preparat* signals; for the signal of *execution* the arm is extended vertica and then lowered quickly to the side.

8. *Attention.*—Extend the arm vertically to its full extent a describe quickly several small horizontal circles with the hand.

Countermarch.—Extend the arm vertically and describe quic several large horizontal circles with the arm. (Similar to *rally* Cavalry Drill Regulations.)

Right sections forward.—Extend the arm vertically and then thr several times to the front.

To close intervals.—Point to the section on which the interv are to be closed and then signal *right* (*left*) *oblique* or *right and* *lique,* according as the intervals are to be closed on a flank section on an interior section.

To extend intervals.—Point to the section on which the intervals e to be extended, and then signal *left* (*right*) *oblique* or *right and left lique,* according as the intervals are to be extended on a flank ction or on an interior section.

Right (*left*) *by section.*—Point to the right (left) section and signal *rward.*

Action front (*right, left, rear*).—Extend the arm vertically and then wer it quickly to the front (right, left, rear), and repeat several mes.

Pack.—Move the arm several times from right to left over the ead.

Prepare for action front (*left, right*).—Signal for action desired and ien signal *attention.*

Halt.—Extend the arm vertically and hold it in that position until ie signal is obeyed.

Cease firing—for all guns.—A long whistle blast to call the attenon of chiefs of platoon and chiefs of section; then wave the arm to ght and left several times in front of the body, palms to the front, ngers extended upward.

Cease firing—for a particular gun.—A long whistle blast; then raise ie arm half extended and motion toward the particular gun.

Left about.—Extend the arm horizontally, pointing to the rear.

To march to a flank.—Extend the arm horizontally to the right or ft.

To fight on foot.—Same as for *pack.*

WHISTLE SIGNALS.

9. *Attention.*—A long blast.

Action Front.—A succession of short blasts.

Pack.—Two long blasts.

10. Owing to the great importance of being able to maneuver nd control the troop in action, it will be frequently drilled by neans of signals alone.

FIRING INSTRUCTION.

OBJECTS AND SEQUENCE OF THE INSTRUCTION.

11. The objects of this instruction are:

(*a*) The training of the personnel in the mechanism of the method of fire, so that, at the word of command, fire of the desired natu may be delivered with certainty and celerity (fire discipline).

(*b*) The training of officers and noncommissioned officers in th conduct of fire so that they may be enabled to utilize the weapon at their disposal to the best advantage (fire control).

A progressive order of instruction will be followed in each cas Training in the elementary duties of the two kinds should be u dertaken separately at first. Drill in the mechanism of fire is th essential feature of instruction of the first kind; practice in dete mining firing data and in adjusting fire under various assumed co ditions, the essential feature of instruction of the second kind. A soon as the two kinds of instruction have sufficiently progresse they should be combined and the training carried on, first on th drill ground and then on terrain of every available descriptio targets representing as nearly as possible those to be met in servi should be attacked; first, by simulated fire and finally with th service ammunition.

12. Training in fire discipline begins with the instruction of th individual members of the gun squad, passes to that of the gu squad as a unit, and then to that of the section.

The gunmen must be taught to perform quickly and co rectly the individual duties required of them in the service of th piece. They must acquire such a thorough knowledge of the duties and such a well grounded habit of performing them proper that in the excitement of action their execution will be a matter second nature to them.

The gun squad must be trained as a unit, so that its individu members work together smoothly, quietly, and effectively in ser ing the piece.

The instruction of the platoon and troop should secure the ha monious coöperation of the organization as a whole in deliverin fire as a single fire unit, thus enabling the commander, witho confusion or delay, to turn the fire of his organization from poi to point and to concentrate or distribute this fire in such mann as may be desirable.

INDIVIDUALS OF THE GUN SQUAD.

13. The individuals assigned to the service of a gun constitute a
m squad.

14. For the service of a Maxim gun, the gun squad is ordinarily
mposed of a corporal (or experienced private), who acts as
inter, and three privates, Nos. 1, 2, and 3. These four men are
ferred to as gunmen.

15. The instruction involves acquiring by the gunmen:

First. An intimate knowledge of the matériel in use in the organi-
tion, the function to be performed by the principal parts, and
e mode of their operation.

Second. Skill and dexterity in the performance of their duties.

Instruction of the first kind is imparted by careful and pains-
king description on the part of the instructor, supplemented in
ch case, as far as practicable, by actual illustrations of the mode
operation of the particular element of the matériel being described.

Instruction of the second kind is had by persistent drill in the
rescribed duties and by continued practice with the various mechan-
ms under all possible conditions.

16. The instructor strives to develop, on the part of the soldier,
intimate knowledge of all the matériel in use, the names of the
fferent parts, their purposes and methods of operation. This
struction is had on subjects such as the following:

1. Nomenclature of the principal parts of the piece and its equip-
ent, and of the ammunition-carrying devices.
2. Operation of the different parts of the gun.
3. Sights: Description and methods of operation.
4. Methods of fire: Description of the different kinds and occa-
ons in general when the different kinds are applicable.

DUTIES OF GUNMEN.

DUTIES IN GENERAL.

17. Pointer:

Packs and unpacks gun.
Sets sights.
Aims piece.
Fires piece.

Shifts trail.
Assists in reducing jams.
Operates roller handle in unloading.

No. 1:
Assists in packing and unpacking the tripod.
Loads piece.
Assists in reducing jams.

No. 2:
Assists in packing and unpacking tripod.
Serves ammunition and water.

No. 3:
Assists No. 9 in unpacking 1st ammunition mule.
Serves ammunition and water.

DUTIES IN DETAIL.

The pointer.

TO LAY THE PIECE.

18. Firing data will be communicated to the pointer as follo

1. Target (that squad of infantry at 2 o'clock).
2. Range (1,500 yards).
3. Deflection, right (left), seven points.

If the target does not lie within the arc of traverse, the poin commands: *TRAIL RIGHT* (*LEFT*). At this command he stradd the trail, grasps the seat with both hands, and lifts the trail a inches from the ground, moves the trail to the right (left) until target is approximately at the center of the arc of traverse, when lowers the trail to the ground.

The pointer now takes his seat, raises his sight and sets it at indicated range and deflection, brings the line of sight upon lower element of the target by means of traversing and elevati gears, clamps the piece and calls *READY.*

TO FIRE THE PIECE.

19. The piece being loaded and laid, the instructor informs pointer what kind of fire it is desired to use and commands: *F* or *COMMENCE FIRING.*

While the instructor is giving his directions as to the kind of fi the pointer grasps the handle block with both hands, places b umbs on the trigger and at the command ***FIRE*** presses the trigger, es the number of rounds directed and then releases the trigger.

If the command be ***COMMENCE FIRING,*** he presses the trigger and ntinues the kind of fire directed until the command ***CEASE FIRING,*** hen he rises from his seat, raises the cover, holds the feed box in sition with his left hand, throws the roller handle forward twice ith his right hand, and at the same time looks downward at the ck to see that the cartridge is withdrawn from the chamber on e second backward movement and that the carrier falls at the sition of extreme recoil. If the foot trigger be used, the pointer laces one hand on the elevating and one hand on the traversing echanism.

If the gun be loaded for continuous fire and the command be ven for firing single shots, the pointer throws the roller handle ice forward without pulling the belt.

Number 1.

20. When the trail is shifted, No. 1 picks up the ammunition box om which the belt is engaged in the feed box, and when the inter lowers the trail he replaces the box in its proper position.

TO LOAD THE PIECE.

21. ***LOAD.***—He places the ammunition box on the ground on the ght of the piece, opposite the feed box, latch toward the piece; pens the ammunition box and passes the belt through the feed box om right to left, drawing it to the left with the right hand until e first cartridge is engaged by the lower feed pawls. Still grasp- g the belt on the left of the feed box with the right hand, he pulls e roller handle twice forward with the left hand; each time after e has pulled the roller handle forward to the position of extreme coil, he pulls the belt to the left and then releases the roller han- e, allowing it to fly back with the full force of the recoil spring. he piece is now loaded for continuous fire.

To load the piece so that it will fire single shots only, he proceeds above except that he does not pull the belt to the left the second me the roller handle is in the forward position. To reload when ring single shots, the roller handle is thrown forward once and lowed to fly back to place with the full force of the recoil spring.

operation until the jacket is full. Water can not be introduced into the jacket when there has been sufficient firing to make an appreciable pressure of steam, although it is not essential that firing be suspended while the jacket is being filled. The jacket being filled, No. 2 replaces cap on filling valve (and condenser tube, if used, on steam escape).

(*e*) When the piece is being unloaded, to see that the free end of the belt does not become entangled or twisted before passing through the feed box.

(*f*) When the ammunition squad or gun squad becomes reduced, to supply No. 1 with ammunition and to procure for himself an ample supply of water to cool the barrel.

Number 3.

. The duties of No. 3 are:

During the firing, to see that Nos. 1 and 2 have an uninterrupted supply of ammunition and water, No. 3 going to procure this supply himself should the ammunition squad be unable, from any cause, to keep the gun properly supplied.

THE GUN SQUAD AS A UNIT.

. As soon as the gunmen have been instructed in their indi-
al duties they are taught to work together as a unit. The effi-
service of the gun depends upon the orderly coöperation of the
ers of the gun squad as well as upon their skill as individuals.
ore the habit of combined effort must be acquired.

An alert and soldierly manner is exacted of the gunmen and
ould be taught to perform their duties as briskly and rap-
consistent with efficient service.

To form the gun squad.

instructor indicates the place of formation and com-
FALL IN.

ointer repeats the command and places himself where the
ad is to rest, one yard in rear of the trail and facing
gunmen form in single rank on the left of the

To tell off the gun squad.

29. The instructor commands: ***CALL OFF.***
The men call off from right to left: ***Pointer, One, Two, Three.***

To post the gun squad.

30. ***POSTS.***—The gunmen move quickly to posts as follows:
Pointer: Seated on trail seat, facing to the front.
No. 1: Kneeling on right side of the piece, slightly in r of the feed box, within reach of and facing it.
No. 2: Kneeling on left side of piece, slightly in rear of t feed box, within reach of and facing it.
No. 3: Kneeling about 20 inches to the right and abreast the pointer, facing to the front.

In seeking cover the gunmen may take their posts prone.

In action, No. 3 should, when practicable, remain with the a munition supply in order to reduce the number of men exposed the gun.

31. On occasion of ceremony the gunmen take posts, all stan ing, facing to the front, as follows:
Pointer: Close to and on the left of the trail seat.
No. 1: On the right of the gun, close to and on line with t muzzle.
No. 2: On the left of the gun, close to and on line with t muzzle.
No. 3: Close to and on right of the trail seat.

The chief of section on such occasions takes post 1 yard to t right of No. 3, facing to the front.

To reform the squad.

32. ***FALL IN.*** The gunmen fall in in rear of the piece.

To change the posts of the gunmen.

33. 1. ***Change posts,*** 2. ***MARCH.***
At the first command all rise. At the second command t pointer takes the post of No. 3, No. 3 of No. 2, No. 2 of No. 1, a No. 1 of the pointer, all moving quickly by the shortest practical routes.

This movement should be repeated until all members of the g nad have received instruction in each position.

To change targets.

4. The instructor commands, for example:
1. Change target.
2. Door of that white house, at such o'clock.
3. Range, so many yards.
4. Deflection right (left) so many points.

t the second command the pointer shifts the trail to give the ce the general direction and then lays his piece on the new get by the methods prescribed.

To discontinue and to resume fire.

35. To discontinue the fire at any time: *CEASE FIRING.*

he pointer releases the trigger and throws the roller handle ice forward.

o resume the fire, the instructor gives proper commands for ng. Executed as prescribed in paragraph 19.

MOVEMENTS OF THE PIECE BY HAND.

SHORT DISTANCES.

36. The instructor commands: 1. *Forward* (*To the rear, etc.*), *MARCH.*

t the preliminary command all rise. The piece is unloaded, . 1 passing the ammunition box to No. 3. The pointer takes the l box in his left hand and seizes the left trail handle with the ht hand. No. 3 takes the ammunition box in his right hand and zes the right trail handle in his left hand. No. 1 seizes right leg tripod with his left hand. No. 2 seizes left leg of tripod with his ht hand. Pointer commands *LIFT*, and the piece is raised from ground, Nos. 1 and 2 placing their disengaged hands under shoes.

t the command *MARCH*, all step off in the indicated direction.

hen in section, the extra boxes and intrenching tools are carried No. 9, who comes forward for the purpose.

To halt the squad.

7. 1. *Squad,* 2. *HALT.*

ll halt and lower the loads.

38. If while marching the command for action be given, the piece owered to the grouud in the indicated direction and loaded.

To change direction when moving by hand.

39. 1. *Column right* (*left, half-right, half-left*), 2. ***MARCH.***
The squad moves in the indicated direction, the pivot moving the arc of a circle of about 2 yards radius.

To move to the rear when moving by hand.

40. 1. *To the rear,* 2. ***MARCH.***
The squad moves to the *left about,* the pivot moving on the arc a circle of about 2 yards radius.

LONGER DISTANCES.

41. 1. *By parts,* 2. *Forward,* (*To the rear, etc.*), 3. ***MARCH.***
At the first command the piece is unloaded. The pointer la down the sight rack, turns elevating screw down, rises, and su porting the handle block against the pit of his stomach, disconne the elevating gear, replaces the elevating pin, and then grasping t handle block with both hands, stands ready to lift. No. 1, aft unloading the piece, springs to the muzzle and grasping it in bo hands, stands ready to lift. No. 2 assists in unloading; unscre trunnion pin, withdraws it, and crouches on the left of the carriag No. 3 gathers the tool box, ammunition and water boxes, plac the tool box within reach of the pointer's hand, and picks up o ammunition box and the water box. The pointer commands ***LIF*** places the gun on the shoulders of No. 1 with the latter's assistanc and then picks up the tool box and one ammunition box, if the be two at the gun. No. 2, as soon as the gun has been lifte replaces the trunnion pin and gives it a turn or two to secure i He then springs in front of the tripod, grasps the legs near t shoes, one in each hand, raises the tripod on its trail to a verti position, and without unscrewing the wing nuts, takes the trip on his back, one leg on each shoulder and the trail extending dow his back.

At the command ***MARCH,*** No. 2, No. 1, No. 3, and the point march in column of troopers in the order named, and are mane vered by the same commands as a column of troopers.

It may be necessary, especially in wooded country, for No. 2 unscrew the wing nuts and close the legs, carrying the tripod his shoulder. In this case No. 3 assists No. 2 to raise the trip before picking up his boxes.

42. At the command *HALT,* all loads are lowered to the ground.
43. If while moving by parts, a command for action be given, the ece is assembled for firing in the indicated direction and loaded.

THE SERVICE OF THE PIECE.

44. In firing instruction a target is always designated, the firing ta announced, and the operations of setting sights, loading, inting, and firing the piece are habitually performed as in actual ing.
45. The instructor should use every means at his disposal, such miniature targets, stationary and moving targets, to simulate rvice conditions; and where ammunition is available the instruc on should be held frequently on the range with ball cartridges.

SPECIAL METHODS OF FIRE.

46. The methods employed in machine-gun fire may be classified follows:

(*a*) Ranging fire.
(*b*) Fire for effect.

Fire for effect may be further subdivided into—

(*a*) Fixed fire ....
(*b*) Traversed fire ....
(*c*) Zone fire ....
(*d*) Traversed-zone fire.......

Continuous or intermittent.

Ranging fire.

47. Even when ranges are found with perfect accuracy, changes e to light, wind, and atmospheric conditions would necessitate ght modifications in sight setting for any given range. When ese modifications are multiplied by the inaccuracy in range ding instruments it is not surprising to find that to place a shot oup in the target at the first shot is the exception rather than the le. It is to correct the sights quickly for weather conditions and accuracies of estimates or of range-finding instruments that rang g fire is used.
48. *To find the range.*—The piece being loaded and laid, the in uctor commands: 1. *Single* (*or so many*) *shots for range,* 2. *FIRE.*

The pointer fires as directed; and if able to locate the shot grou makes the automatic correction of sights (G. O. 130, W. D., ser 1908); and when the piece is relaid on the target, calls *REA* The instructor again commands *FIRE*. This is repeated until t shot group is properly placed.

If the command be 1. *Ranging fire*, 2. *COMMENCE FIRING*, t pointer fires at the second command, making his corrections, a continues the ranging without further command until the shot gro is properly placed.

49. When the pointer is unable to locate the point of strike so informs the instructor who gives him corrected data:

(*a*) By announcing a new range and deflection, as—
1. Range, so many yards.
2. Deflection, right (left) so many points.

or

(*b*) By directing that the sight be moved, as—
1. Take so many yards more elevation.
2. Take four more points right.

The pointer makes the indicated correction, relays the piece on t target, and calls *READY*.

50. Should the observer be unable to locate the point of str after several strings, he will direct the pointer to aim either over under the target, without changing the sights, and, by means of t elevating gear, decrease or increase the elevation for each str until he can see the point of strike.

51. Should the target still not be found, the instructor will dir the pointer to fire at some other point in the vicinity of the tar where the conditions seem more favorable for "getting dust," a when the shot group is located, correction may be made to get the target.

52. In action the movements of the enemy will often be the sur indication of the point of strike. When practicable, ranging f should be conducted with single shots, as the identity of the mach gun is thus concealed until fire for effect can be opened w accuracy.

Fire for effect.

53. In all fire for effect the correct sight setting is presumed have been previously determined by ranging or otherwise, and t piece loaded and laid on the target.

i4. ***Fixed fire*** (*small target*).—The instructor informs the pointer
w many shots to fire per string and commands: 1. *Fixed fire*, 2.
MMENCE FIRING.

The pointer fires as directed, keeping his aim on the target or on
element of the target directed by the instructor. The pointer
ifies his aim after each string and, if no further instructious are
eived, continues the firing until the instructor commands ***CEASE
ING.***

i5. *Traversed fire* (*wide, shallow target*).—The instructor informs
pointer how many shots per string and commands: 1. *Traversed*
, 2. *Right to left* (*Left to right*), 3. ***COMMENCE FIRING.***

The pointer executes this fire as prescribed for *Fixed fire*, except
it the strings are directed at each element of the line successively,
directed.

i6. *Zone fire* (*narrow, deep target*).—The instructor informs the
inter how many shots to fire per string and commands: 1. *Zone*
, 2. *Head to rear* (*Rear to head*), 3. ***COMMENCE FIRING.***

The pointer executes this fire as prescribed for *Fixed fire*, except
it the strings are directed at different elements or portions of the
jective successively from head to rear, or vice versa.

i7. *Traversed-zone fire* (*wide, deep target*).—The instructor in-
ms the pointer how many shots to fire per string and commands:
Traversed-zone fire, 2. ***COMMENCE FIRING.***

Executed like *Traversed fire*, except that each time the pointer
verses across the target he aims successively at a higher or more
tant point of the target.

i8. The instructor may command: 1. *Continuous fixed* (*traversed,*
.) *fire*, 2. ***COMMENCE FIRING.***

The pointer fires continuously, pausing only to correct sights or
n.

In *Continuous traversed fire* or *Continuous traversed-zone fire* the
ce is swung slowly from side to side, using the traversing mech-
ism, thus covering a given area with a continuous stream of
llets. In exceptional cases the traversing gear may be un-
mped.

i9. In firing at a moving target, the best results will usually be
tained by aiming a few yards in front of the target and com-
ncing to fire just before the leading element crosses the line of
ht, continuing the fire until the rear element has also crossed the
e of sight, then traversing to the front again. The pointer then
pends the fire, shifting the trail if necessary, again aims in front

of the target, and fires as before, repeating the operation as long the target remains in sight.

60. *Fixed fire, Traversed fire, Zone fire,* and *Traversed-zone fire* m be used at night, omitting the readjustment of the sights after ea string. When practicable, the piece should be laid in the dayli on some known element of the target or the ground to be cove and an auxiliary aiming point established.

The sights may be illuminated by a small electric light. Ni firing is used principally to cover a particular point, as a path, ro defile, approach, or to cover ground in front of the gun wit point-blank range. In this case the piece should be laid nea parallel to the surface of the ground and clamped. In exceptio cases the traversing gear may be unclamped. This method of f is of particular value on outposts liable to attack or surprise.

SUPERNUMERARIES.

61. Supernumeraries will not be used with the gun squad wh the gun is in action, as they only increase the size of the tar which the gun squad presents to the enemy, and their prese gives no beneficial results to offset this objection.

SERVICE OF THE PIECE WITH REDUCED NUMBERS.

62. In order to accustom the gun squad to maintain the servic the piece when its strength is reduced by casualties, the instruc causes certain gunmen to fall out and assigns their duties to the g men that are retained, as shown in the following table:

Gunmen retained.	Duties performed.		
	Pointer.	No. 1.	No. 2
Pointer, Nos. 1 and 2	Pointer	No. 1	Nos. 2 a
Pointer, No. 1	Pointer, No. 1	Nos. 2 and 3	
Pointer	Pointer, Nos. 1, 2 and 3*		

JAMS.

INSTRUCTION OF GUN SQUADS.

63. To insure promptness and accuracy on the part of the gun
iads in the reduction of jams, their causes and reductions must
thoroughly gone over, both practically and theoretically, the
tructor requiring each man to state aloud each step, and the
son therefor, and the method of reducing the jam. It is good
truction to derange the adjustment of the gun and require the
djustment to be made by separate members of the gun squad.

64. The determination of the causes of jams and their reduction
simple matters when intelligently and systematically attempted.
nkering ignorantly with the parts of the mechanism is criminal
elessness, but maladjustment through ignorance or neglect is
xcusable and liable to cause the gravest consequence in action.
e use of much force, violent efforts to force the parts to work
perly by blows of a hammer, and the like, are sure evidence of
orance and loss of temper.

65. A machine gun is a delicate piece of machinery. It is a gas
gine, the moving parts of which vibrate at the rate of about 600
es per minute under a pressure of some 30,000 pounds to the
are inch. If these parts are accurately adjusted, lubricated, and
pt in proper condition, they will function properly. *If not, the
se must be found and removed, not by brute force, but by careful,
lligent examination* and adjustment.

66. It has been found by experience that certain jams are liable
occur while firing the Vickers-Maxim machine gun. The amount
interruption of fire that results from these jams will depend upon
instruction of the gun squad. With badly instructed or careless
n the results may be so serious as to put the piece out of action
l jeopardize the accomplishment of its mission in an engagement.
th well instructed men, strictly alert and attentive to their
ies, but little inconvenience will be caused by jams, for they
l seldom occur, and will be quickly reduced.

67. A jam in a machine gun is the failure of the mechanism to
ction so that the automatic fire is uninterrupted as long as there
cartridges in the belt and the trigger is pressed.

68. Jams are classified, according to their causes, as follows:

A) Those whose number may be lessened by reasonable care in—
  (*a*) Adjustment of the mechanism and the care of the gun.
  (*b*) Loading of belts and the manner in which they are fed.

(*c*) Cleaning and oiling of the working parts of the gun b fore and during firing.

(*d*) Examination of all ammunition before and after it loaded into belts and the rejection of all cartrid that are foul or defective.

(*e*) Smoothing (with fine file or emery) of such rough or p jecting surfaces in the mechanism of the gun as ca undue friction of its working parts.

(B) Those caused by the wear or breakage of parts, because defective material, long usage, accident, or the enemy's fire.

The reduction of jams comprises three steps:

(*a*) Determination of the character of the jam by exa nation.

(*b*) Removal of the immediate obstruction.

(*c*) Correction or removal of the cause which produ the jam.

69. The men must be taught that the gun is a delicate mech ism which will function properly only when correctly adjusted served. The parts are made to fit accurately and the applicatio much force is always unnecessary. If the parts can not be made function properly by use of reasonable force, look for the obstr tion and remove it.

70. The use of the file, emery dust, or emery paper should prohibited except under the direction of a commissioned officer an expert machine-gun man.

71. ENUMERATION OF JAMS OF THE FIRST CLASS.

(A) Faulty adjustments	(*a*) Faulty packing of barrel	1. Too tig 2. Too loo
	(*b*) Incorrect tension of recoil spring	1. Too str 2. Too we
	(*c*) Incorrect head space	1. Too gre 2. Too sm
	(*d*) Incorrect gas space	1. Too gre 2. Too sm
(B) Faulty loading	(*a*) Of cartridges in belt. (*b*) Of the gun.	
(C) Fouling or lack of oil.	(*a*) Lock. (*b*) Chamber. (*c*) Ejector tube. (*d*) Guide ribs (*e*) Any other movable part.	
(D) Defective ammunition.	(*a*) Loose bullets. (*b*) Deformed or corroded shells.	

) Faulty construction..
- (a) Projection of feed-box cartridge spring.
- (b) Gib-spring plate too thick.
- (c) Carrier grooves too small.
- (d) Insufficient leverage of fusee.
- (e) Mouth of ejector tube improperly beveled.
- (f) Binding of trigger bar under handle block.
- (g) Gib spring too weak.
- (h) Gib-spring plate worn thin on edges.
- (i) Trigger bar sprung or ribs on short (stud) slot too thick.

72. Jams of the second class, especially in action, can not be reseen or classified. The only rule that can be laid down regardg them is to repair the damaged part, if possible, or replace it om such spare parts as are available.

The most usual of these jams are caused by the breaking of (*a*) ain springs; (*b*) firing pins. The former can be quickly recogzed by the ease with which the roller handle can be thrown forard and lack of response to the action of the trigger. The latter, repeated snapping of the lock without resulting explosion of rtridges.

REDUCTION OF JAMS OF THE FIRST CLASS.

Barrel packed too tight.

73. The barrel can be packed so tightly that the recoil spring es not return it to the firing position. This case is recognized by e fact that the roller handle is prevented by pressure against the ller from completing its cycle, and a portion of the forward end the slot is visible just in front of the crank shaft. Further amination shows that the carrier has dropped and holds a caridge and an empty shell and that the belt has not fed forward.

To reduce: Repack the barrel so that it can be moved (without e recoil spring attached) by a pressure of less than about 6 pounds.

NOTE.—Use the spring balance for this purpose.

Barrel packed too loose.

74. This will not ordinarily be the immediate cause of a jam; t if great care is not exercised in cleaning and oiling the lock and coil mechanism, the leakage of the water jacket will so rust the rts that they will fail to function properly.

This trouble will be removed by packing the barrel so as to event leakage.

Tension of recoil spring or gas space too great.

75. This can usually be recognized by the inequality of interva between shots just before the jam occurs. An examination of th mechanism will show the carrier either (*a*) supported on the upp beveled surfaces of the side cams and the roller handle near its fo ward position; in which case the cartridge in the carrier will b found pressed against a properly presented cartridge in the fee box, and no portion of the slot will show as the barrel has bee returned to its firing position; or (*b*) thrown forward above the sid cams with the roller handle nearly vertical, in which case the ca tridge in the carrier will be found forced along the left side of th cartridge in the feed box and a portion of the forward end of th slot will show.

The reason for this is that the tension of the recoil spring is great that it induces a forward movement of the lock *before it h completed its backward movement,* the carrier thus riding back on the side cams instead of dropping and passing under them.

To reduce: Lessen the tension of the recoil spring or reduce th gas space, or both, until the lock can complete a rearward moveme before being returned to the firing position. This coadjustment the forces of recoil and counter recoil is best accomplished b experimental firing with each gun.

NOTE.—With the spring balance attached to the knob of th roller handle the proper tension of the recoil spring will usuall necessitate a pull of from 4 to 6 pounds for the initial movement the roller handle.

Recoil spring too weak or tension too little.

76. Ordinarily this jam will only be found with recoil sprin that have lost much of their elasticity through long usage or abus This jam is caused by the fact that the recoil spring does not retur the barrel and lock or the lock to the firing position. This jam, i so far as the lock is concerned, will occur most frequently as th fouling of the working parts increases through firing.

To reduce: Use the spring balance as prescribed in the precedin paragraph. Should the maximum tension fail to produce the d sired result, the recoil spring should be set aside for condemnatio and be replaced by a new spring.

77. In this connection it is thought advisable to emphasize th necessity of a proper coadjustment of the recoil spring and the reco of the barrel. The recoil of the barrel is regulated by the barrel disk. By gas space is meant the space between the barrel disk and the nozzle—the greater the gas space the lesser the force of the recoil, and conversely. As the gas space is reduced the tension of the recoil spring should be increased until a proper balance of recoil and counter recoil is obtained to produce the greatest rapidity of fire.

Head space too great.

78. This jam is recognized by the fact that the base of the shell is blown off about one-half inch from the cannelure. The base of the ruptured shell is carried back with the lock while the other part remains in the chamber. The new cartridge will be found partially telescoped into this part, the roller handle in a vertical position. The cause is that the carrier does not close tightly against the face of the chamber and the cartridge, being unsupported except at the base, is ruptured by the pressure of the powder gases.

To reduce: Throw the roller handle forward, when the new cartridge will be extracted from the chamber, ordinarily with the ruptured shell. These should be removed from the carrier. The base of the ruptured shell will be automatically ejected. In case the ruptured shell is not withdrawn with the new cartridge, the clearing plug should be used. Add washers to the crosshead until the carrier fits snugly against the face of the chamber.

Head space too small.

79. On account of undue friction between the face of the chamber and the carrier, the latter will not rise to the firing position.

To reduce: Remove washers from the crosshead until the carrier works snugly against the face of the chamber, but without undue friction.

Cartridges improperly loaded in belt.

80. Properly filled belts are those into which cartridges have been inserted a uniform distance. When the feed box presents cartridges that are not thus loaded the following conditions ensue:

(*a*) If the cartridge has been inserted too far, but has entered the feed box, it may not be engaged by the carrier, or it may be engaged only on one side, thus preventing the carrier from rising.

(*b*) If the cartridge has been inserted so far that it can not enter the feed box, a jam will result, owing to the interruption mechanism; in some cases the cartridge may enter the feed box b cause the next cartridge to bind on the rear of the feed box.

(*c*) If the cartridge has not been inserted far enough it may stri against the rear of the feed box, causing the interruption of the fee mechanism.

To reduce: Straighten cartridge in feed box if possible; if no remove cartridge to rear from feed box and reload piece.

Note.—Much handling of loaded belts soon causes the cartridg to become misplaced, as also does carrying them by pack for an considerable distance with the present equipment; hence, no mo belts should be kept loaded than required by the necessities immediate supply.

Fouling and lack of oil.

81. *The lock.*—Fouling or lack of oil may manifest itself by:

(*a*) The carrier failing to drop.

(*b*) The carrier failing to rise to the firing position.

The former is due to gumming or friction between the carrier an the lock frame, and the latter to gumming or friction between th side or lifting levers and the lock frame.

To reduce: In either case remove the lock and clean thoroughl without taking apart. A frequent change of locks during firing advised, not only to remove fouling but to insure both locks bei kept in good working order.

82. *The chamber.*—Fouling of the chamber will manifest itself b the cartridge being partly inserted therein. Examination wi show scratches on the surface of the shell.

To reduce: Clean the chamber thoroughly, but do ***not*** oil exce when firing is completed. It is oiled then to prevent rust.

83. *The ejector tube.*—Fouling of the ejector tube manifests itse by the shell being but partly inserted therein. Examination sho scratches on the surface of the shell.

To reduce: Clean the tube thoroughly and cover the surface wit a thin coating of sperm oil.

84. *The guide ribs.*—This jam is recognized by the fact that th lock travels only a short distance forward and then binds. Exam nation will show worn places on the guide ribs and in the groov of the recoil plates, caused by undue friction on these parts.

To reduce: Clean the parts thoroughly and oil with thin lubrica ing oil. Smooth the surfaces with crocus cloth if necessary.

Loose bullets.

85. The indications of this jam are the same as those of the foul chamber, and further examination will disclose the bullet and loose powder grains on the floor of the casing. The empty shell will show no discoloration from the explosion of the powder and loose powder will be found in the chamber.

To reduce: Remove the bullet and proceed as for foul chamber.

NOTE.—Loose bullets are usually caused by the hammering they receive when carried any distance by pack with the present ammunition box. For this reason it is best not to load the belts until a short time before they are to be fired; but if transportation of loaded belts by pack is imperative, then the belts should be made to fit snugly in the ammunition boxes by the insertion of sheets of cardboard, felt, or other suitable material between the cartridges and the side of the box.

Deformed or corroded shells.

86. Such shells will not usually enter the chamber, and will give the same initial manifestations as a foul chamber.

To reduce: Remove the defective shell from the carrier and reload.

Projection of the feed-box cartridge spring.

87. This is recognized by the position of the roller handle, it failing to complete its rearward movement and remaining a short distance above the roller. Also, if the lock be carried slowly forward, glancing vertically downward between the front surfaces of the carrier and the exposed edge of the feed-box cartridge spring, it will be noticed that the gib presses unduly against the surface of this, thus preventing the carrier from rising to the firing position. This may cause the breakage of the spring near its base.

To reduce: Carefully smooth away the projecting edge of the cartridge spring so that the gib may ride smoothly over it.

Gib-spring plate too thick.

88. This jam manifests itself by the carrier, when cleaned and properly oiled, failing to drop. Examination of parts of the lock will show bright, worn places on the front face of the lock and on the gib-spring plate.

To reduce: Dress down the outer surface of the gib-spring plate with a fine file, hone, or emery until it rides freely over the lock frame.

Gib-spring plate worn on edges.

89. In this jam the roller handle will be found almost vertical. The fired cartridge will be found above its position in the carrier partly over the gib. The upper edge of the case will be found upset by having been forced against the upper side of the ejector tube. The gib-spring plate will be found out of position.

To reduce: Replace gib-spring plate.

Gib spring too weak.

90. The symptoms of this jam are similar to those of the worn gib-spring plate. The plate will not always be out of place in the latter jam.

To reduce: Replace gib spring.

Carrier grooves too small.

91. This jam manifests itself by the carrier, properly cleaned and oiled, failing to drop. Examination of the parts of the lock discloses bright, worn, or rough places on the flanges of the lock frame and in the grooves of the carrier.

To reduce: Enlarge the grooves of the carrier and dress down the flanges of the lock frame with fine emery; then carefully smooth all surfaces with crocus cloth.

Insufficient leverage of fusee.

92. When the slotted portion of the fusee is cut too deep, the tension of the recoil spring is insufficient to revolve the fusee beyond a point which seems to be a dead center. It is recognized both with and without the lock in place. The roller handle remains about one inch above its extreme forward position.

To reduce: Fill up the slot of the fusee with a small hard-wood wedge so as to give the necessary leverage. The imperfect fusee should be replaced by a new one as soon as possible, and then be or condemnation.

is of rare occurrence.

Mouth of the ejector tube improperly beveled.

93. This jam is recognized by the new cartridge failing to enter the chamber, the shell remaining entirely exposed and about one-sixteenth of an inch of the bullet visible. The forward movement of the lock is interrupted by the shell last fired striking against the lower lip of the ejector tube, which upon examination is found to have been left with a sharp edge, thus obstructing the free entry of the shell. The end of the shell will usually be found more or less upset.

To reduce: File a suitable ramp at the mouth of the ejector tube.

Binding of trigger bar under handle block.

94. This jam is recognized by the trigger failing to return to its rear position.

To reduce: File away the groove on the under side of the handle block sufficiently to allow free movement of the trigger bar.

Bending of the trigger bar.

95. This jam is recognized by the fact that the piece has failed to fire although all parts seem to have functioned properly. The bar will show a worn mark. The bending of the bar has prevented the front end of the long slot engaging the hand sear, which rides over the top.

To reduce: Staighten the bar. This same jam may be caused by too great thickness of the ribs on small slot, which is reduced by dressing down the ribs.

THE PACKER.

96. The object of this instruction is detailed training:

First. In setting up and fitting the aparejo and properly cleaning and caring for the equipment.

Second. In proper care of pack mules.

Third. In harnessing and unharnessing.

Quiet, well-trained mules should be used in the instruction of recruits.

To set up the aparejo.

97. *To rib up:* Unlace the slits and handholes; soak the aparejo in tepid water for about fifteen minutes, drain it and lay it flat back pieces up; insert each boot stick and the saddle bar through the slits in rear and press them to their places in the boots and the center stitch line, slotted sides up; insert the numbered set of nine ribs for each side or panel through the slits in rear in their numerical order and seat them in that order from collar to rear in the slots of the boot sticks and saddle bars, butts to the boots; secure the top of each rib as it is seated by inserting the key bars at the front edge below the collar and passing it over the ribs in place; fasten the key bars to the collar by the thong.

NOTE.—Aparejos are issued to the service with ribs, boot sticks and saddle bars in place. Ribs are furnished in two half sets of nine each. Each rib is numbered at the butt to correspond to its proper numerical position in the panel, counting from the collar to the rear. Each rib is also stamped with the size of the aparejo for which it is made. The aparejos are furnished in 58, 60, and 6 sizes. The ribs for a 60-inch aparejo are therefore marked 1–60, 2–60, 3–60, etc. Should repairs or alterations make it necessary to rib up, the butt of the fifth rib is seated in its slot, the overlap at its slot in the saddle bar is marked and cut away, and the other ribs are cut to the exact resulting length.

To fill or pad.

98. In the process of padding, the hand only must be used. It is therefore *positively forbidden* to use a tamping stick, as is customary with the common aparejo in forming the boot with hay and tamping stick. The "boot bar" being of wood no tamping is necessary, and is accurately formed and represents that much hay in the accurate formation of the boot. The boot bar therefore supplies the expertness required of the packer in forming the boot to the conformation of the belly of the pack mule. Now turn the aparejo over, belly pieces up; procure about 6 pounds of fine, soft, elastic hay; taking a little at a time, tease or "mix" it thoroughly, insert it through the hand-hole and thus gradually fill the body of the aparejo with a smooth and even layer not more than 2 inches thick.

NOTE.—Other filling may be used in case of necessity, such as flock, moss, excelsior, curled hair, sea grass, but these substitutes are difficult of manipulation in alterations necessary to accommolate the rigging to injuries of the mule. By teasing or "mixing" s meant the arrangement of the straws so that they will cross one nother. The body of the aparejo is that part which comes in conact with the body of the mule. As 3 inches of the lower portion f each boot stick and 3 inches of the upper portion of each saddle ar must not come in contact with the mule, no filling should be ressed under the boot stick or within 3 inches of the center stitch ine. The body course tapers, however, so as to overlap the boot tick and saddle bar, and also tapers toward front and rear.

To face up or dress.

99. To adjust the aparejo more accurately to the shape of the ule, introduce the filling with the palm of the hand up and press t well into the space along the front and rear edges of the boot tick; continue the facing along the boot stick at front and rear, radually increasing its thickness to about an inch at 7 inches rom the corner of the *front* of the boot and forming its inner edge nto the arc of a circle concentric with the hand-hole, the thickness apering to the ends of the arc; continue the facing for 3 inches nore toward the hand-hole, rapidly decreasing the thickness to othing; proceed in exactly the same way at the *collar*. Under no ircumstances should the collar facing reach within 7 inches of he center of the hand-hole. Face the *rear* of the boot and saddle ar to half the thickness for that of the front. Now connect the ront boot and collar facings by a dressing along the front edge about inches wide and an inch thick, decreasing in thickness toward the and-hole and toward the middle of the edge. Fill and dress the ther panel in the same manner.

NOTE.—The object of the boot facing is to cause the boot stick to arry horizontally and parallel to the center line of the mule and ive free action to the mule's elbow. Mules of large barrel will equire a thicker facing than that described. The object of the ollar facing is to cause the saddle bar to carry horizontally and arallel with the center line of the mule and to protect the mule's ithers. Mules with high withers will require a thicker facing than hat described. In setting to the shape of the mule the aparejo ends at the middle of the front edge. It is important that the ody course remain undisturbed during dressing and that the intructions given be carefully followed to avoid sore withers and tails nd body and belly bunches,

To attach the crupper.

100. Stand the aparejo on its boots in its normal position; sec a lace thong to the front hole on the upper facing of the crupper each side and fasten the cruppers with short thongs to the cen holes of the carrier pieces on the rear of the aparejo; pass the cr per lace thong through the second hole from the top of the fr facing of the aparejo, through the second hole of the crupp through the third hole of the aparejo facing, through the four hole of the crupper, and so on, finishing through bottom holes facing and crupper, and tying to crupper hole.

NOTE.—In lacing the crupper to the aparejo, the thong must passed through the holes from the outside and must not be twist the lacing must not cross, and it is important that the tie be m on the last hole of the crupper instead of the aparejo.

To assemble the saddle.

101. Place the sobre jalma on the aparejo so that its staple hole fit over the staples on the latter; seat the frame and pass the strap on the sobre jalma through the staples; pass the cincha throug the frame over the side bars, finger loop up and gas-pipe end c cincha to the left; double the cincha over the frame, strap inside double the crupper forward so that the dock piece rests on th cincha.

NOTE.—Guayaba, willow, dogwood, hickory, or any other woo combining the qualities of permanent elasticity and strength ma be used to replace broken ribs.

102. When the set up aparejo is to be filled, *no soaking* is nece sary; instead, make the belly pieces pliable by rubbing with a we sponge, and only at that portion when padding for the withers.

103. Mules weighing 850 to 900 pounds require a 58-inch aparej 1,000 pounds, 60-inch, 1,100 pounds, 62-inch; for heavier mules r [illegible] ld be made for larger sizes.

[illegible] mule is loaded, the cincha, in travel, should free th [illegible] t an inch; more than this will prevent a proper gri

[illegible] high on the body of the mule or if they reac [illegible] en though they ride horizontally and parallel t [illegible] e mule, the aparejo will cause sore tails or dock [illegible] rn easily. This latter fault encourages injur [illegible] ng. If one or both boots flare out or turn i oward the mule, cinch sores as well as sore tails result or belly and ody bunches are caused.

The width of the collar-arch clearance should be at least 5½ nches. If it is too narrow or too wide, or if the saddle bars slope ownward toward the front, there will be sores on the withers; if hey slope toward the rear, there will be injuries over the loins alled kidney sores.

If the lacing of the crupper is drawn too tight at the bottom the ower edge of the crupper will rub the buttocks and cause abraions.

104. The object to be attained is the uniform distribution of the eight of the load over that portion of the mule's body anatomally suited to carry a burden, so that the saddle will ride with tle motion and without friction of the bearing surface of the ody. The contact of the bearing surface of the saddle must be lose at all points. As the mule's body swells from front to rear, he more or less cylindrical shape of the aparejo after the body ourse is laid must be modified by facing up so as to provide a conave surface to fit over a convex surface. But as the barrel of the roperly conformed mule is nearly cylindrical through the rear half r more of the contact surface, no facing is necessary, as a rule, in he rear part of the aparejo, although conformation may require it xceptionally.

Care of Equipment.

105. The leather parts of the equipment should be exposed to e sun as little as possible, and cleaned whenever dirt, grit, or dust as collected on them or when they have become saturated with e sweat of the animal.

The parts should be separated and each sponged with a lather of tile soap and warm water. They should then be rubbed nearly y and a lather of Crown soap and warm water should be applied. xcess of moisture in this lather should be permitted to evaporate a shaded place. This treatment frequently applied is sufficient, t if the leather has become harsh and dry, its dressed side should lightly coated with neatsfoot oil after the castile lather, and lowed to dry before the Crown-soap lather is applied, the latter moving the surplus oil. Polishing of the leather parts should not permitted as it leads to surreptitious use of commercial materials at are often detrimental to the life of the leather. Leather is injured by exposure to the sun, by water, and by the use of to much Crown soap or of common commercial soaps. In prope condition it is clean, soft, smooth, pliable, and free from stains.

106. Immediately after the equipment is removed from th animal, canvas parts should be scraped free from all adhering substances with a dull but smooth-edged knife. Especially constan attention must be given to the cleanliness and pliability of the canvas side of the corona and crupper and to the dock piece.

107. Woolen parts and hair cinchas should be rubbed betwee the hands or hung up and beaten with switches or wands to remov dust, mud, and hair, and to make them soft and pliable. The should be exposed frequently to the sun, completely unfolde Blankets should be washed in tepid water at least once each month

108. Metal parts must be kept free from rust, dirt, sweat, an hair. Those issued with coats of paint or lacquer are to be maintained in that condition. Bright parts should be polished. Th tongues, rollers, and keepers of buckles must work freely, to whic end the straps must be unbuckled in cleaning.

109. All troop and platoon officers attend and supervise th cleaning at stated times.

Disposition of Equipment.

110. The aparejo, with pack frame, cover, and crupper attache rests on its boots; crupper doubled forward; the gas-pipe end of th cinch passed through the frame from the near to the offside, sea up, and folded back smoothly from each side on top of frame; th blanket, when used, is folded and placed on the cinch, folded edg to the front; the corona, folded, canvas side in, is placed on th blanket, folded edge to the front.

The pack paulin should be thrown over each pack and secure by the thongs. The bridle and blind are hung on pegs or la across the corona.

111. In garrison the aparejos are aligned upon their boots, ov which may be kept, upon hooks, the respective hangers and co tents. Load and belly cinchas may be placed on the respectiv aparejo or hanger. The guns and tripods should, when considere necessary, be kept in packing cases.

112. In camp the aparejos of each section should be arranged i numerical order, parallel to the picket line and about 10 yards fro it, the center of the aparejo being in the center of the space allotte o the section. The aparejos should be raised from the ground.[a] f suitable material can not be obtained, the aparejos of the ammuition mules may be placed on their loads and that of the gun mule n the boxes taken from other loads, preferably water boxes. All inchas, etc., should be placed on the coronas before the packs are overed by the pack paulins or rigging cover.

113. Each gun should be mounted and placed on the flank of he section to which it belongs, pointing toward the picket line and djacent to the gun pack. The gun should be covered with gun over and spare pack cover.

In inclement weather the gun and equipment should, when practicable, be placed under cover.

114. The following distribution of loads gives the maximum mount of weight and ammunition that should be carried. This istribution will be modified as circumstances require, especially for rill, when complete loads will, as a rule, not be carried. It is adisable, however, that drill be frequently had with loads of the ormal weight, in order to accustom both men and animals to field onditions. When but three boxes are prescribed to be carried in n ammunition hanger, it may be advisable, with the present hanger, o add an empty box to each side for better carriage. This will add bout 5 pounds per box in weight.

When practicable the picket rope, picket pins, and sledge will be rried in the wagon.

First gun mule.

un and cover (1).
ripod (2).
ck mattock and handle (2).
pare barrel and case (1).
ne box ammunition (3).[b]
ne pack cover (3).

Second mule.

Two water boxes.
Four ammunition boxes.
Two shovels.
One filling cup (2).
One tool box (3).
One ammunition box (3).
One pack cover (3).

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[a] When the ground is dry it is not necessary to provide a platform for the arejos to stand on while in bivouac, and during inclement weather all hangers ith their respective contents may be left on the aparejos to which they belong.

[b] The pack frame, as now devised, does not provide a seat on top of frame for nmunition. The ammunition is carried on the respective hangers.

Third mule.

Two water boxes.
Six ammunition boxes.
One pack cover (3).
One sledge (3).

Fourth mule.

Six ammunition boxes.
One belt filler (3).
Two water boxes.
One pack cover (3).

Fifth mule (right section).

One cleaning box (3).
One picket rope (3).
Six ammunition boxes.
One pack cover (3).
One lash rope (3).
One sling rope.
Two lair ropes.

Fifth mule (left section).

One cleaning box (3).
Two picket pins.
Six ammunition boxes.
One pack cover (3).

NOTE.—(1)=near side; (2)=offside; (3)=top load.

Care of the pack mule.

115. In order that injuries and sickness may be avoided o promptly discovered and cured, the animals are carefully inspecte by their drivers immediately after they are unharnessed, and th results are reported to their chiefs of section, who will also inspec to see that this duty is efficiently performed. Such correction o treatment as is practicable is applied at once, and difficult or seriou cases are reported to the quartermaster sergeant.

116. All men should report to their chiefs of sections abrasion lumps, bunches, swellings, punctures, rope burns, discharges fro eyes, nose, and mouth, loss of shoes, failure to feed properly, cas of fatigue—in short, everything, whenever noticed, indicating th existence of diseases or injury or need of correction.

117. Bunches under the aparejo are caused by the sudden reli of excessive pressure on the part of the body. To determine th location of the fault in the aparejo, the face of the bunch is wet wit water; the aparejo is placed in its correct seat without corona o blanket, and with the crupper turned forward is gently rocked fro side to side. Upon removal, a damp spot on its inner surface wi indicate where the filling should be carefully removed without di turbing the remainder. The bunch will disappear on the next day' travel; if not traveling, a bunched mule should be loaded and exe

e or two hours is sufficient.

118. Sores and abrasions may be caused by the presence of foreign substances, such as burs or gravel. Sores under the dock piece result from the aparejo being too short in length, riding too high or too long, causing the boots to lap under the animal's body, or do not carry horizontal or parallel to the axis of the mule. Abrasions of the withers or loins indicate a lack of sufficient padding or that the saddle bars are not horizontal or that they are not parallel to the axis of the mule or that the arches are too broad or too narrow. Abrasions of the buttocks are treated by the lengthening of the crupper lacings on the last two holes of the crupper and front lacing.

119. In general, swellings are caused by pressure and inequalities and sores by friction. They can be avoided only by correct setting up of the aparejo, its proper fitting and its modification to conform to changes in the condition of the animal. Very tight cinching, instead of correcting bad adjustment, causes swellings, pain, fatigue, and excessive sweating, and makes the animal unruly and hard to manage in its effort to get rid of the load.

Harnessing and unharnessing.

120. The blanket is folded as prescribed in paragraph 175, Cavalry Drill Regulations, except that the blanket is held with the short side up and down, so that the fold will cross the U. S.

To harness.

121. All men are instructed in the duties of both near and off packers. In harnessing and unharnessing they work in pairs, one on each side of the mule.

122. A quiet, well trained mule is assigned to two recruits, each of whom should be supervised at first by a thoroughly instructed man. The instructor causes a mule to be harnessed and points out and names the different parts of the pack outfit and explains their use. He then has the harness taken off and placed in rear of the mule.

123. The pack outfit being in rear of the mule, the instructor causes the recruits to stand to heel, and commands: 1. By *DETAIL*, *HARNESS*.

Upon the completion of each detail, the recruits remain in the places that they occupy.

Google

Bridle.—The near packer puts on the bridle as prescribed in par graph 177, Cavalry Drill Regulations.

Blind.—The near packer takes hold of the halter with the le hand, grasps an edge of the blind near one end with the rig hand, carries it well over the mule's neck to the offside, tail dow brings the blind well to the front over the mule's ears and places over the eyes, the tail on top of the neck. The blind should n be raised too high in passing it over the neck, as the mule may du from it. A restive mule should always be blinded when harnessi or unharnessing, packing or unpacking.

Corona.—The offpacker puts on the corona as prescribed for th saddle blanket in paragraph 176, Cavalry Drill Regulations.

Blanket.—The offpacker on the near side places the folded blank on the corona, in a manner similar to that prescribed for putting o the corona. He then passes to the offside and with the assistance the near packer on the near side, smooths the blanket.

Saddle.—Both packers, each working on his own side, grasp th aparejo by the lower corners, raising it high enough to clear th mule's rump, and set it on the mule's back a little in rear of its prop position.

Crupper.—The near packer takes hold with left hand on lower ed of crupper, fingers under; the right hand palm down near the doc piece; the off packer takes hold similarly, hands reversed; bot raise crupper well up, reverse it, and turn it down over the crou The quicker the action the more easily the crupper is turned. Th near driver raises the mule's tail and places the dock piece we under it, taking care that no hairs are caught. Both then place th breast against crupper to hold it in place and set the aparejo forwa into its position, taking care to keep it straight, the near pack with right hand on the center of the aparejo and his left on re corner of aparejo, and the off packer with left hand on the center aparejo and his right on the rear corner. The off packer pulls th gas-pipe end of the cincha toward him, and guiding it down t middle, passes it under the belly to the near packer. He then ste to the mule's shoulder, faces to the rear, and places his right ha between the corona and the withers and his left hand on the re corner of aparejo. The near packer seizes the end of the cincha its corner and passes the cincha strap through the cincha eye formed by the gas pipe, from above, brings it up and passe through the rendering ring from above and again through the cin eye in rear of the other part of the strap. He then grasps cincha strap near the cincha eye in his right hand and places left hand on the boot of the aparejo, and takes a moderate pull on the cincha strap. Now, holding on to the cincha strap with the right hand and grasping the rear corner of the boot he pulls the aparejo forward to place, and calls *set* or *cinch*. At the call set or cinch the off packer passes in rear and observes whether the aparejo is straight; if not, it is correctly adjusted. He then takes hold of the cincha strap on the right of the near packer and places his right knee against the boot. The near packer raises his left foot to the boot and both pull together until the cincha eye is at the edge of the boot, with the cincha in the center of the aparejo; after which the off packer returns to the off side. The near packer holds the cincha strap with his left hand and passes the end under frame to the off packer, who passes it through the finger loop from above and back into the right hand of the near packer, who secures it and then removes the blind which he places over his left shoulder with the tail under the right arm.

124. To harness without detail: HARNESS.

To unharness.

125. 1. *By detail, unharness,* 2. *Blind;* 3. *Unsaddle.*—The near packer unfastens the cincha strap and folds his end of cincha over the pack frame; the off packer then folds the gas-pipe end of the cincha over the pack frame. Both then push the aparejo slightly to the rear. The near packer places his left hand on the upper edge of the crupper, his right on the lower edge near the dock piece; the off packer takes a corresponding position, hands reversed; and both together raise the crupper and reverse it forward over the cincha; take hold of the aparejo as in saddling, pass it backward over the mule, and lower it carefully to its place in rear.

Blanket and corona.—The off packer on the near side grasps the front and rear edges of blanket at the middle points, removes it, and allows it to fall into a fold between his hands, places it along the near side of the corona, grasps the corona at the middle points of its front and rear edges, removes it, and places both on the aparejo.

Unbridle.—The near packer removes the blind and unbridles as prescribed in Cavalry Drill Regulations, and places blind and bridle on the corona.

126. To unharness without detail: UNHARNESS.

SCHOOL OF THE SECTION.

127. The section consists of one gun and its ammunition, wit its complement of men, saddle horses and pack mules, and its equipment. Its personnel and animals are as follows:

The chief of section, a noncommissioned officer, preferably sergeant.

The gun squad (par. 14).

Five pack mules and five drivers: Privates Nos. 4, 5, 6, 7, and 8 who lead the first (gun), second, third, fourth, and fifth mules, i the order named.

Two supernumeraries, Nos. 9 and 10.

128. The personnel of the section is instructed in the combine duties of gunmen and drivers, in packing the piece and ammunition for transport and in preparing for action.

129. The habitual formation is in column, the gunmen an No. 9 riding on the left of the drivers, as follows: Pointer wit No. 4, No. 1 with No. 5, No. 2 with No. 6, No. 3 with No. 7, No. with No. 8; No. 10 rides in the file closers to keep the mules up, o in rear of the section, as may be directed. The mules are led o the right of the drivers. The chief of section rides on the left o the pointer. This habitual formation is referred to as *in colum* (see plate).

130. The guide of the section is its pointer.

To form the section.

131. *Saddle.*—All horses are saddled by their riders and turne over to No. 10 as horse holder, or in his absence to No. 9.

132. *Line up.*—Gunmen and No. 9 (if not holding horses) plac aparejos and packs in rear of where mules are to be harnesse (par. 112); loads are placed in rear of aparejos, ammunition boxe being in the hangers. Each driver secures his mule and leads hi to a point 1 yard in front of his own aparejo, facing away fro same. All then form in line, each pair with their own aparejo gunmen and No. 9 on the right of the aparejo, drivers on the left.

133. *Harness* (par. 124), or, *By detail, harness* (par. 123). Gunmen acting as off packers work with the drivers with whom the ride as near packers.

134. *Pack.*—Loads are placed on mules by the numbers harnessing. When the chief of section has satisfied himself by inspectio that all is in order, he commands:

135. *Lead out.*—Gunmen and No. 9 go to horses, each taking his wn horse and that of his driver, the latter on the right, and form column of twos. Drivers lead mules and form in column abreast f the horses, each taking his own horse.

To mount the section.

136. 1. *Prepare to mount,* 2. ***MOUNT.***

Gunmen and No. 9 open out to the left. Movement is then exe-ted as prescribed in Cavalry Drill Regulations.

137. If the formation is to be in line, the command is: ***LEAD UT INTO LINE.*** Gunmen, each with his two horses, form in line ith intervals of 2 yards between pairs; drivers lead their mules nto line on the right of their own horses. The section is mounted y the same commands as in Cavalry Drill Regulations, the gunmen ting as Nos. 1 and 3.

138. To form column from line or line from column: 1. *Fours ght* (*left*), 2. ***MARCH.*** This movement is executed at a walk only.

Being in column to form column of twos.

139. Being at the halt; 1. *By twos,* 2. ***MARCH.***

The pointer moves forward at the walk; the other gunmen take e trot, forming column of twos on the pointer; the drivers move rward at the walk when No. 4 is disengaged; Nos. 9 and 10 form rear of the section, No. 9 on the left.

If marching at the walk, the drivers halt. The movement is then ecuted as above.

If marching at the trot, or at the walk, and the command be trot, e pointer moves at the trot, the gunmen increasing the gait, the rivers move at the walk until No. 4 is disengaged, when all take e trot.

Being in column to form column of troopers.

140. 1. *By trooper,* 2. ***MARCH.***

Pointer moves as in paragraph 139, gunmen following in column troopers. Drivers move forward at the proper gait when disen-ged, the driver of each ammunition mule being careful to leave fficient space for the preceding mule before moving out.

141. Column of troopers is formed from column of twos as in avalry Drill Regulations, the drivers observing the precautions id down in paragraph 140.

Being in column of twos, to form column.

142. Being at the walk or at the halt: 1. *Posts,* 2. *MARCH.*

The drivers may move forward at the walk, No. 4 inclining to th right to clear the gunmen. The gunmen move forward 3 yards an halt and then move forward at the walk when each is abreast his place.

If marching at the trot, or at the walk and the command be tro the drivers move at the trot, No. 4 inclining to the right, as in th preceding paragraph, and take the walk when No. 4 is abreast the pointer. Gunmen move at the walk, Nos. 1, 2, and 3 haltin when No. 4 arrives abreast of the pointer. Each moves forwar when abreast of his place.

143. Column is formed from column of troopers in a simil manner, the gunmen remaining in column of troopers.

To march to the rear.

144. 1. *Countermarch,* 2. *MARCH.*

The section executes a *column left about.*

The section may be moved short distances to the rear by the com mands: 1. *Left about,* 2. *MARCH,*

Executed as prescribed in Cavalry Drill Regulations for *wheeli about by fours,* and from the halt or walk only.

145. On right into line may be executed by the commands an means prescribed in Cavalry Drill Regulations. This movement executed at the walk only and should be used only when formin line preparatory to forming camp or to dismissing the section.

146. Changes of direction are executed as prescribed for a colum of fours in Cavalry Drill Regulations.

To fire to the front.

147. Being in column: *ACTION FRONT.* All halt; gunmen an No. 9 dismount, throwing reins over horses' heads to drivers; th chief of section dismounts and links to the horse of pointer. T pointer releases the lashings of the gun, lifts the gun out of th hanger and carries it in rear of the mule to the tripod. No. 2 (No. 1, depending on which is first in position) releases the lashin of the tripod and lifts the front end, holding it until No. 1 drops th trail (rear leg) to the ground, when he raises his end until th tripod stands on the end of the trail in a vertical position. H hen releases his hold, grasps the legs near the shoes, one in each and, raises them to the firing position, shoves the studs well home nd allows the tripod to drop to the front. As the tripod falls he prings to the left and crouches opposite the carriage, withdraws he trunnion pin, inserts it again, screwing it home when the ointer has placed the gun in the carriage. He then tightens the ing nuts and takes his post. When No. 2 has inserted the trunion pin, the pointer straddles the trail, withdraws the elevating in, and supporting the handle block in the pit of his stomach, ith both hands guides the lug of the inner elevating screw to its lace and inserts the elevating pin; he then pulls out the inner trail ube, takes his seat and adjusts his sight. As soon as No. 1 has ropped his end of the tripod, he procures the ammunition box om the gun mule, hastens to his post and loads the gun. No. 3 n dismounting proceeds at once to the second mule, releases the shings and assists in removing the loads. He then carries one mmunition box and the tool box to the gun, placing the former n rear of the box carried by No. 1, and the latter within easy reach f the pointer's right hand. No. 9 assists in removing loads from he second mule, and then carries a water box and the filling cup o No. 2. Except when carrying ammunition and water or when oving the piece by hand, the post of Nos. 3 and 9 during firing is ith the loads removed from the second mule.

As soon as the gun mule and first ammunition mule are unpacked, he section countermarches, and, when straightened out, moves at he trot 20 yards to the rear or to suitable cover when necessary, gain countermarches and halts 15 yards directly in rear of the iece.

To fire to the right or left.

148. ***ACTION RIGHT*** (***LEFT***).

Executed as prescribed for *action front,* except that the gun is assembled pointing to the right (left) and drivers execute *column left ight*) instead of the first countermarch.

To fire to the rear.

149. ***ACTION REAR.***

Executed as in *action front,* except that the drivers, passing the un on the left, move forward and countermarch at the proper ime.

150. When forming part of a rear guard the section may marched with the gun mule in rear by facing the section to the re and then executing *left about*. In executing *action rear* from th formation, the drivers move forward 20 yards and halt, Nos. 4 ar 5 then executing *left about*. In packing, Nos. 4 and 5 only tal their mules to the gun.

Being in column, to move forward the gun mule and first ammuniti mule only.

151. 1. *Prepare for action front,* 2. *ACTION FRONT.*

At the first command, Nos. 6, 7, and 8, with their mules, and N 10 halt. The rest of the section continues to move forward column, Nos. 2, 3, and 9 forming in rear of Nos. 1 and 5, in ord named, from right to left. At the second command, No. 1 forn on left of pointer, Nos. 2, 3, and 9 oblique to the left and form left of No. 5, all at the trot. All dismount, pointer and No. throwing their reins to Nos. 4 and 5, No. 1 linking his horse to th of the pointer, chief of section to that of No. 1, No. 3 to that of N 2, and No. 9 to that of No. 3. The movement is completed as paragraph 147, Nos. 4 and 5 seeking cover as near as possible to t gun.

152. If the command be *prepare for action right* (*left*), the enti section changes direction before Nos. 6, 7, 8, and 10 halt. Tl second command in this case is *ACTION FRONT.*

Being in action, to pack.

153. *PACK.*

The gun mule and the first ammunition mule, with led hors are brought forward at the trot, the other mules and led horses the walk. The piece is unloaded, No. 1 replacing the belt in bo The pointer lowers sight, dismounts gun, and packs it. No. 2 u screws trunnion pin, unscrews wing nuts, then springs in front the tripod, and grasping the legs near shoes, one in each han raises the tripod on its trail to a vertical position, allowing the le to fall; grasps the top carriage with both hands, places the tripod the hanger with the assistance of No. 1, then secures the lashing and mounts. When No. 2 raises the tripod, thus sliding the inn tube to place, No. 1 clamps the bracket clamp, his right arm pas ing under and supporting the legs, his left holding the trail sec He now assists No. 2 to place the tripod in the hanger and the aces the ammunition box on the gun mule, securing the same. e then mounts. No. 3 loads the tool box and extra ammunition ox on the second mule, which he assists in packing, after which e mounts. No. 9 loads the water box and filling cup and assists packing the second mule, and mounts.

move the piece forward a considerable distance under doubtful cover, before going into action.

154. *TO FIGHT ON FOOT.*

All halt. The chief of section, gunmen, and No. 9 dismount and n over their horses as prescribed for going into action. Posts e taken as follows: Chief of section in front of the section to onnoiter and locate firing position; No. 9 to lead the gun mule; . 3 to lead the first ammunition mule; pointer abreast of lashing gun; No. 1 abreast of lashing of tripod; No. 2 in rear of the first nmunition mule to keep the latter up. The squad is maneuvered prescribed for the column. At the command for action, No. 3 ks the first ammunition mule to the pack frame of the gun mule. he gun is then put into action, No. 1 assisting No. 3 in unpacking e ammunition mule.

155. From any formation the gun may be unpacked and carried rward by hand by the commands and means laid down in para-aph 41. In moving forward by parts from pack, the pointer will rry the gun.

AMMUNITION SUPPLY.

156. Ammunition is supplied directly to the gun by No. 3, to hom, when necessary, it is brought by No. 9, from where the imals are under cover. When Nos. 5 and 7 are not occupied in ling belts they may be used in supplying ammunition and water No. 3.

157. All members of the section receive instruction in what per-ins to the supply of ammunition to the gun, in the nomenclature, re and operation of the belt-filling machine and in the distribu-n of loads.

158. All men, but particularly those assigned to the duty, must impressed with the idea that the gun becomes useless unless the nmunition supply is efficiently kept up. Nos. 5 and 7 operate e belt-filling machine.

To set up the belt-filling machine.

159. No. 7 removes the belt-filling machine from the four mule and then, with the assistance of No. 5, sets it up as follow No. 7 opens the box and removes the hopper, file, and spanne then the bracket, attaching it to one end of an empty (origina ammunition box or other convenient place. He now removes t body and adjusts it to the bracket so that the spring catch in t former enters its notch in the latter; slips the handle on the cran and inserts the split pin; turns the handle until it is horizonta pointing to the left; and holding it in position, inserts the lug the hopper in its seat, the grooves facing the machine, and press it down until entirely seated. He now brings the handle to vertical position and swings the belt cover to the left, uncoverin the belt passage. No. 5 procures and prepares an empty bel passes the brass end through the passage, brass strips pointing the left. No. 7, facing the hopper, grasps the belt near the en pulls it through with his left hand until the first cartridge loop opposite the plunger; closes the belt cover; grasps the crank handl with the right hand, holding the belt with the left, turns the cran to the right, clockwise, watching to see that the plunger enters th first belt loop. No. 5, sitting astride the ammunition box an facing the machine, supplies the hopper with cartridges by stripping from the clips directly into the hopper and seeing that the feed properly.

160. A belt having been filled, No. 5 will load it carefully int an empty box, bullets pointing in the direction indicated by th painted figure in the bottom of the box. No. 7 now prepares an inserts a new belt while No. 5 is packing the loaded one. As soo as No. 5 has finished packing the loaded belt he returns to hi position at the hopper.

161. To insure accurate and proper filling of the belt, No. 7 ma insert about 1 inch of the end of the screw-driver between the hea of the cartridge and the supporting shoulder where the belt leave the body.

THE TROOP.

162. The management of the troop and its effectiveness are dependent upon the grouping of the men into sections, under the immediate control of noncommissioned officers, who are held responsible for the training, discipline, and order in camp an rters and who are trained as chiefs of section.

163. The captain is responsible for the theoretical and practical
struction of his officers and noncommissioned officers. He re-
ires them to study and recite these regulations so that they can
plain thoroughly every movement before it is put into execution,
d can impart the necessary instruction to the members of the
op. The lieutenants will frequently drill the troop. Chiefs of
tion should be capable of drilling the platoon.

164. Chiefs of platoon and chiefs of section should repeat such
mmands of the captain as are to be immediately executed by
eir platoons or sections. In successive formations, each chief
ll give his commands at the proper time and place.

165. The troop consists normally of three platoons of two sec-
ns each.

166. In whatever direction the troop faces, the platoons are
signated from the right when in line, and from the head when in
umn, as first platoon, second platoon, third platoon.

167. When in line, sections are designated from right to left, as
ht section, first platoon; left section, first platoon; etc. The nu-
rical designation of sections never changes, except that when
ns are unpacked and established in line, they are designated from
ht to left as No. 1, No. 2, No. 3, etc. Sections may be designated
the name of the noncommissioned officer in command for the
time being; as, Sergeant Smith's section.

168. Officers who are absent are ordinarily replaced by the next
rank. Chiefs of platoon who are absent are ordinarily replaced
chiefs of section of the platoon in order of rank; chiefs of section
replaced by their pointers; pointers are replaced by suitable pri-
tes selected by the chiefs of section. Chiefs of section and point-
may be replaced by supernumerary noncommissioned officers.

169. If a change of formation requires a change of post of offi-
rs or noncommissioned officers, they proceed by the shortest routes
their posts in the new formation.

170. Chiefs of section supervise the gait and direction of their
ctions.

171. The guide of the troop in column of sections is the guide of
leading section; in line, the guide of the right, left, or center sec-
on; in column of platoons, the guide of the leading section on one
de or the other. In line the left section, first platoon, or right
ction, second platoon, is the center section, according as there are
o or three platoons.

172. The habitual formation of the troop in line is a line of sec-
ns in column with intervals of 16 yards. This is refer

in line or as the *order in line.* The closed interval between sectio in line is 8 yards. This formation is referred to as *in line at clos intervals* or as the *order in line at closed intervals.*

POSTS OF OFFICERS, NONCOMMISSIONED OFFICERS, AND TRUMPETERS.

In line.

173. The captain is 12 yards in front of the center.

The chiefs of platoon are 2 yards in front of the centers of th platoons.

The first lieutenant commands the first platoon, the second lie tenant commands the third platoon, and the first sergeant co mands the second platoon.

The guidon is carried by a noncommissioned officer or expe enced private. Except where otherwise noted, the guidon plac himself on the left of the chief of the base section. During oblique he does not change his position.

Trumpeters, except where otherwise noted, are 2 yards in rear the captain, boot to boot (see plate).

In column of sections.

174. The captain is 12 yards from the left flank, opposite t center. Chiefs of platoon are 2 yards from the left flank, oppos the centers of their platoons.

In column of platoons.

175. The captain takes post as in column of sections, on t side of the guide. Chiefs of platoon take posts as in line.

In firing position.

176. The captain is 12 yards in rear of the guns, opposite t center. Chiefs of platoon are 2 yards in rear of the guns, oppos the centers of their platoons. The guidon is in rear in charge the animals and ammunition supply. The guidon staff should reversed.

177. During actual firing and when executing *to fight on foot,* t captain and chiefs of platoon are dismounted. The horses of t captain and chief of the first platoon are held by one trumpeter, those of the chiefs of the second and third platoons by the other trumpeter. These horses are led to the troop animals.

178. The cooks, farrier, horseshoer, saddler, and wagoner may be assigned posts with the various sections.

179. The drill as laid down for the troop is applicable, with but slight modification, to the drill of the platoon.

To form the troop.

180. On reaching the stable, the first sergeant commands: ***FALL OUT.*** The sections are then formed by their chiefs, under the supervision of the chiefs of platoon, as prescribed in paragraphs 131 to 136, inclusive.

181. The first sergeant places himself 6 yards in front of and facing where the center of the troop is to rest, and commands: ***FORM TROOP*** or ***FORM TROOP AT CLOSED INTERVALS.***

The guidon places himself, facing to the front, 4 yards to the right of where the right section, first platoon, is to form. Chiefs of section march their sections successively to their places on the line with the proper intervals. When necessary the first sergeant directs the chiefs of section to ***CALL ROLLS*** and ***REPORT.***

The captain takes post 12 yards in front of and facing the center of the troop and receives the report of the first sergeant.

Chiefs of platoon then make a general inspection of their platoons and take their posts (see plate).

At the command ***REPORT*** of the captain, chiefs of platoon, beginning on the right, salute and report, ***SUCH PLATOON IN ORDER, SIR.*** The captain returns each salute.

182. The troop may be formed in column of sections by the command: ***FORM TROOP IN COLUMN OF SECTIONS.***

Being in line to form column of sections to the front.

183. 1. ***Right*** (***Left***) ***by section,*** 2. ***MARCH.***

The right (left) section marches straight to the front; the other sections change direction to the right (left) and follow the right (left) section, the distance between sections being 4 yards.

This movement may be executed from line at closed intervals or when obliquing by heads of sections, by the same commands. The right section moves without changing direction, the other sectio successively follow in the trace of the sections in front. Whe obliquing to the right the command should be: 1. *Right by sectio* 2. ***MARCH***, and vice versa.

Being in line at closed intervals to form column of sections to a flank.

184. 1. *Column of sections*, 2. *Right* (*Left*) *section*, 3. *Forwa column right* (*left*), 4. ***MARCH.***
The right (left) section moves in the new direction, followe successively by the other sections.

Being in column of sections, to form column of twos.

185. 1. *By twos*, 2. ***MARCH.***
The first section executes the movement as prescribed. Th other sections take the gait of the drivers of the preceding sectio and execute the movement successively.

186. *Column of troopers* is similarly executed.

Being in column of twos, to form column.

187. 1. *Posts*, 2. ***MARCH.***
From the halt or the walk, the movement is executed simultan ously by all the sections. Those in rear then close at the trot.

If at the trot, or at the walk and the command be trot, each se tion in rear of the first moves at the trot and executes the mov ment as the drivers of the preceding section come down to t walk.

188. *Column* is formed from *column of troopers* in a similar manne

Being in line, in column of sections, or in column of platoons, to march the rear.

189. 1. *Countermarch*, 2. ***MARCH.***
Executed by each section as prescribed in paragraph 144.

Being in line at closed intervals, to march to the rear.

190. Being at the halt or at the walk, the captain comma 1. *Right sections forward*, 2. ***MARCH.***
The right section of each platoon moves forward so as to clear left section. The left sections halt or remain at the halt. As s

the right sections have cleared the left sections, the captain gives e commands for the countermarch, which is executed simultane- sly by all the sections. On the completion of the countermarch e sections in rear gain their positions at a trot.

If moving at the trot or at the walk and the command be trot, e right sections move forward at the trot until they have cleared e left sections by about 15 yards, when the captain gives the com- ands for the countermarch. The right sections countermarch at e trot and take the walk on arriving on the line. The left sec- ons move at the walk.

For short distances only the *left about* may be used (par. 144).

Being in line, to close intervals.

191. 1. *On* (*such*) *section,* (*such*) *platoon, close,* 2. ***MARCH.***

Executed as prescribed in Cavalry Drill Regulations for closing mass from line of fours.

Being in line at closed intervals, to resume the order in line.

192. 1 *On* (*such*) *section,* (*such*) *platoon, extend,* 2. ***MARCH.***

Executed as prescribed in Cavalry Drill Regulations for forming ine of fours from mass.

193. If a greater or less interval than normal interval is desired, is stated in the command; as, *On* (*such*) *section,* (*such*) *platoon, to o many*) *yards extend* (*close*), 2. ***MARCH.***

Troop leading.

194. The captain places himself in front of any section and com- ands: ***FOLLOW IN TRACE.*** The section in rear of the captain hen follows his movements and the others guide on this section, egulating their march so as to maintain their proper relative posi- ions. When the captain no longer wishes the base section to follow im, he announces a guide.

eing in column of sections, to form line to a flank at closed intervals.

195. 1. *Right* (*Left*) *into line at closed intervals,* 2. ***MARCH.***

Executed as prescribed in Cavalry Drill Regulations for forming ass to the right (left) from column of fours.

Being in column of sections, to form line to the right.

196. 1. *Sections,* 2. *On right into line,* 3. *MARCH.*

Executed by each section as prescribed in paragraph 145, a subject to the conditions prescribed therein.

Being in line or in line at closed intervals, to execute the turn and h

197. 1. *Troop right* (*left*), 2. *MARCH.*

The chief of the right section, first platoon, commands: 1. *F* *ward, column right* (*left*), 2. *MARCH,* and commands *HALT* when platoon has advanced far enough to straighten out. The chiefs all other sections command: 1. *Forward, column half-right* (*half-le* 2. *MARCH,* and direct the march of their sections so as to arr about 20 yards in rear of their places in line, when the chief of s tion commands: 1. *Column half-right* (*half-left*), 2. *MARCH,* and ha his section on the line.

Being in line, to fire to the front.

198. *ACTION FRONT.*

Executed by each section as prescribed in the School of the S tion, the drivers of each section executing the countermarch as so as their gun is unpacked and moving at a trot to the rear, guidi on the center section. The guidon at the command for action tal post 10 yards in rear of the center of the troop and reverses t guidon staff. He commands or signals the second countermar and halts the drivers when they are in their proper positions.

Action rear from line and *action right* (*left*) from column of s tions are similarty executed, the guidon taking post 10 yards front of the troop in the former case and 10 yards from the fla away from the firing in the latter case.

Whenever the guns are in action the guidon is in charge of t led animals. Unless he has received instructions from the tro commander as to the cover to be taken, he selects suitable cover near the guns as practicable and supervises the ammunition supp keeping the troop commander informed as to the supply wh necessary.

199. *The following movements are executed in a manner similar those prescribed in Cavalry Drill Regulations for platoon columns fours:*

Being in line, to advance.

1. *Forward,* 2. ***MARCH.***

Being in line, to form column of sections to a flank.

1. *Sections,* 2. *Forward,* 3. *Column right (left),* 4. ***MARCH.***
If marching, the command *forward* is omitted.

Being in line, to change direction to the right or left.

1. *Right (Left) turn,* 2. ***MARCH.***

Being in line, to oblique by heads of sections.

1. *Sections,* 2. *Forward,* 3. *Column half-right (half-left),* 4. ***MARCH.***
If marching, the command *forward* is omitted.

Being in column of sections, to form line to a flank.

1. *On right (left) into line,* 2. ***MARCH;*** or 1. *On right (left) into line at sed intervals.* 2. ***MARCH;*** or 1. *Sections,* 2. *Forward,* 3. *Column ht (left),* 4. ***MARCH.***
If marching, the command *forward* is omitted.

Being in column of sections, to form line to the front.

1. *Right (Left) front into line,* 2. ***MARCH;*** or, 1. *Right (Left) front into e at closed intervals,* 2. ***MARCH.***

THE PLATOON COLUMN.

200. The distance between platoons is 20 yards.
201. In the platoon column the guide is habitually right. ould the captain desire the guide to be left he must so announce it.

Being in line, to form column of platoons to the front.

202. 1. *Right (Left) by platoons,* 2. ***MARCH.***
Executed in a manner similar to that prescribed for the same vement in Cavalry Drill Regulations, the second and third plaons obliquing by heads of sections when uncovered by the preding platoon.

203. Being in line, to form column of platoons to a flank, a halt, or being in column of platoons, to form line to a flank, a halt: 1. *Platoons, right* (*left*), 2. *MARCH.*

Executed by each platoon as prescribed for the troop in pa graph 197.

204. Being in line, to march to the right or left in column platoons, or being in columns of platoons, to form line to right left, and advance: 1. *Platoons, right* (*left*) *turn,* 2. *MARCH.*

Executed by each platoon in a manner similar to that prescrib in Cavalry Drill Regulations for the change of direction by the tro in line of platoon columns of fours.

Being in line at closed intervals, to form column of platoons to a fla

205. 1. *Column of platoons,* 2. *First platoon, right* (*left*) *turn, MARCH.*

Executed successively by each platoon. After the platoon colu is formed, intervals are extended on the right sections at the co mand of the troop commander. If the command *at full interv* is added to the first command, each left section gains its interval making the turn.

Being in column of platoons, to form line to the front.

206. 1. *Right* (*left*) *front into line,* 2. *MARCH.*

The chief of the first platoon marches his platoon 30 yards to t front and halts it; each of the other platoons is marched at oblique by heads of sections until in rear of its place in line, wh it is moved to the front and halted when abreast of the platoon. The principles of paragraph 8, Cavalry Drill Regulatio apply.

Being in column of platoons, to form line to the front at closed inter

207. 1. *Right* (*left*) *front into line at closed intervals,* 2. *MARCH.*

Executed as above, except that the chief of the first plat closes intervals on his left (right) section. The intervals of second and third platoons are closed on the left (right) sections a the second half change of direction.

Being in column of platoons, to form on right or left into line.

208. 1. *On right* (*left*) *into line,* 2. ***MARCH.***
The first platoon changes direction to the right and is halted after advancing 50 yards. Each of the other platoons marches forward and beyond the preceding platoon, changes direction to the right (left) when opposite its place in line, and is halted when abreast of the leading platoon. The principles of paragraph 8, Cavalry Drill Regulations, apply.

Being in column of platoons, to form on right or left into line at closed intervals.

209. 1. *On right* (*left*) *into line at closed intervals,* 2. ***MARCH.***
Executed as in paragraph 208, except that the chief of each platoon, after giving his command for the change of direction, closes intervals on his right section.

210. The intervals may be closed while marching in column of platoons by the commands: 1. *On right sections, close,* 2. ***MARCH.***

Being in column of platoons, to form column of sections to the front.

211. 1. *Platoons,* 2. *Right by section,* 3. ***MARCH.***
Executed by each platoon as prescribed in paragraph 183.

Being in column of sections, to form column of platoons to the front.

212. 1. *Platoons, right* (*left*) *front into line,* 2. ***MARCH;*** or 1. *Platoons, right* (*left*) *front into line, at closed intervals,* 2. ***MARCH.***
Executed by each platoon in a manner similar to that prescribed in Cavalry Drill Regulations for forming front into line of platoon columns of fours from column of fours.

213. The platoon column is closed and the full distance is taken by commands and means similar to those prescribed in Cavalry Drill Regulations for the column of troops. The distance between platoons in close column is 10 yards.

POST OF MACHINE-GUN ORGANIZATION WITH OTHER TROOPS.

214. In line of columns or line of masses (infantry), 16 yards on the left.

In column of troops, 75 yards in rear.

In column of platoons, 24 yards in rear.

215. The machine-gun troop is habitually formed in line at close intervals.

CEREMONIES.

REVIEW.

216. At the command ***PREPARE FOR REVIEW,*** the troop commander and chiefs of platoon draw saber; at the command ***MARC*** the chiefs of platoon ride forward on line with the captain. Th guidon takes post 4 yards on the right of the head of the right section of the troop. Trumpeters take post 1 yard to right of th guidon, boot to boot. Each chief of section sees that his section i aligned to the right.

The troop commander, chiefs of platoon, and guidon salute at th command of the officer commanding the review.

At the command ***CLOSE RANKS,*** if with infantry, and comman ***POSTS,*** if with cavalry, the troop commander commands ***POST*** and chiefs of platoon take their posts. The guidon takes post wit the right section of the troop. Trumpeters join the captain.

In marching in review the platoon column is formed as prescribed in paragraph 205.

In forming line from the platoon column intervals are closed o the right sections before forming line.

TROOP INSPECTION.

217. The troop being in line, the captain draws saber and commands: 1. ***Prepare for inspection,*** 2. ***ACTION FRONT,*** 3. ***FRONT.***

The guidon and trumpeters take posts as prescribed for the review. Each section executes *action front,* the tripods being carrie 10 yards to the front. Ammunition mules are not unpacked. Th chiefs of section and gunmen take posts as prescribed for ceremonie (par. 31) and dress to the right. Each chief of platoon supervise the movement of his platoon, and then takes post facing to th front 2 yards in front of the center of his guns, and draws sabe Drivers align themselves to the right. The captain supervises th alignment, then takes post in front of the guidon, on the line of th chiefs of platoon, and facing to the left, commands ***FRONT.***

The trumpeters and guidon are first inspected, then the sections om right to left. Chiefs of platoon accompany the inspector dur-g the inspection of their platoons. The captain may command *T EASE,* in which case each chief of platoon calls his platoon to ttention on the approach of the inspector, commanding ***AT EASE*** hen the inspection of the platoon has been completed.

If the inspector be other than the captain, the captain faces to he front after commanding ***FRONT*** and salutes the inspector, hom he accompanies during the inspection of the troop, his saber the carry.

At the command ***PACK,*** animals are brought forward at the alk and guns are packed. Chiefs of platoon return saber, super-e the movements of their platoons, and then take their posts. he guidon takes post with the right section and the trumpeters in the captain, who returns saber after commanding ***PACK.***

The captain may dismount the mounted men and conduct any or l of the inspection dismounted. If the inspector be dismounted ch pointer on his approach raises the cover. Should the captain ire to inspect without unpacking the guns, he commands: *Prepare for inspection,* 2. ***MARCH.***

Executed as before, except that the guns are not unpacked.

MARCHING AND CAMPING.

218. On the march and in camping the machine-gun troop will governed by the principles laid down in Cavalry Drill Regula-ns for marches and camping. During the long halts and when cessary mules should be unpacked.

To encamp, the section in line is dismounted; when the com-nd ***FORM RANK*** is given, drivers lead their horses into line, owing the mules to remain at the full length of the lead strap in r of the rank. Horses are turned over to No. 10, and mules are packed and unharnessed, each equipment being placed 2 yards rear of the mule. Mules are then turned over to No. 6, and the ket line is stretched by the other drivers 20 paces in front of the arejo, No. 8 driving the pins. While the picket line is being etched, the gunmen and No. 9 take their own horses and those the drivers and lead them into line so that the horses of the gun-en are 1 yard in front of the aparejos. The horses are unsaddled d tents are pitched as prescribed in Cavalry Drill Regulations, e gunmen and No. 9 acting as Nos. 3. The chief of se pitches with No. 10 in front of the gun, which is placed 4 yards the right of the aparejo.

The troop encamps in a similar manner. The formation tak by the troop preparatory to making camp will depend upon t space assigned for the camp and the formation of the troops wi which the machine-gun troop is to encamp. The 1st sergeant a guidon pitch on the right, leaving an interval on their left for t tent of the trumpeters. Ordinarily four picket pins will be suf cient, one from the first and third platoons each and two from t second platoon.

EMPLOYMENT OF MACHINE GUNS.

RECONNAISSANCE.

219. When it is necessary to bring guns to the support of oth troops, or to perform a particular duty in the general action, it important to open fire as promptly as possible from a position produce the greatest fire effect. The machine gun should regarded as a weapon of opportunity. The occasions for its fi will arise quickly and unexpectedly, and pass as quickly. Its effe must be immediate and decisive. Time occupied in the search f technical and tactical advantages must not delay the action. good eye for ground and skill in making use of cover is, howeve all important. Every position should be reconnoitered previous its selection and occupation.

220. It is essential that the officer commanding the machine gu be constantly informed as to the tactical situation and plan of actio and receive early information as to the special tasks to be perform by him. It may often be advisable to attach an officer of the m chine-gun organization to advance troops in order that he may secu early information concerning the enemy, the ground available f occupation by the guns, and the location of friendly troops.

221. The duty of locating the enemy and of securing informati concerning him devolves in general upon other troops. A machin gun organization must, however, obtain for itself such special inf mation as is needed to insure the proper posting and the effecti employment of the guns to carry out the tasks assigned it. For t purpose reconnaissances are made by the machine-gun command and his immediate subordinates, assisted by scouts, who should selected men. In the troop at least one noncommissioned offic and six enlisted men will usually be available and sufficient. They should be armed with rifles, well mounted, and equipped with field glasses.

222. Scouts operate according to the rules laid down for patrols (see Field Service Regulations 72 et seq.), so far as these rules are applicable to their more restricted functions. These functions are especially to reconnoiter, to observe, to report, and, if necessary, to hold off small groups or individual sharpshooters—a class of enemy peculiarly dangerous to machine guns.

223. When in the presence of the enemy and an action is imminent, they should precede the gun by 700 to 1,000 yards. Communication with the guns should be preserved by signals or otherwise. They will discover and report:

(*a*) The position of the enemy.
(*b*) The position of friendly troops.
(*c*) Such changes in these positions as may occur from time to time during the progress of the action.
(*d*) The approach of hostile parties within dangerous proximity of the guns.

224. As soon as the guns are in action the scouts will fall back on the flank or flanks and continue to observe, driving off hostile riflemen, and if the enemy approaches in force, report the fact promptly, and hold them until the guns can make proper disposition.

225. Scouts should operate in pairs or larger numbers.

226. The object of the training of a scout should be:

(*a*) To develop his powers of observation.
(*b*) To teach him what to look for and how to recognize it.
(*c*) To teach him to report quickly, intelligently, and concisely.

SELECTION OF THE POSITION.

227. If the enemy be reported or if an order from higher authority be received directing the guns to go into action in a certain position, the machine-gun commander, accompanied by his trumpeter, rides forward to the designated position and reconnoiters the ground. The enemy's attention must not be drawn to the chosen position. Horses and attendants are therefore left under cover, and the examination made on foot.

228. To post the guns so as to carry out effectively the task assigned is the first consideration in the selection of a position. Other important considerations are:

(*a*) Securing a large field of fire.

(*b*) Concealment from the enemy.
(*c*) Facility of movement to the front, flanks, and rear.
(*d*) Proximity of good cover for the animals, etc.

229. By a suitable choice of position and of observing stations, great part of the terrain may be included in the field of fire. O account of the small danger space of plunging fire, positions on hig hills should be avoided. Sufficient command for a free field of fir is, however, necessary, especially when firing over the heads o friendly troops, which is an admissible procedure.

230. The existence of dead spaces may be obviated and the fiel of fire enlarged by the skillful disposition of the units of the command. Moreover, by an intelligent dispersion of the units th effect of the enemy's fire is diminished and his difficulties in adjustment increased. Concentration of effort on the part of th command may still be insured by good organization of the service of security and communication.

231. When not incompatible with the effective accomplishmen of the duty to be performed, concealment from view is always t be sought. By rendering the guns inconspicuous or entirely concealing them, their sustained service may be counted upon, whil the difficulties of the enemy in locating his target and adjusting hi fire are correspondingly increased.

232. Nothing less than extensive experience on varied groun will give skill in the concealment of the guns.

233. The following suggestions are to be noted: Position which from the enemy's point of view are on the sky line ar usually the most conspicuous. The guns should therefore be place below the sky line, where they will have a favorable background It is important, however, to have a crest, a hedge, or a clump o trees in front, so as to increase the enemy's difficulties of observation of the effect of their fire. A position in rear of a crest, with parallel crest of about the same height in front and some distanc away, offers many advantages. The enemy is apt to mistake th crest nearest him for the one actually occupied and to conside shots falling between the crests as beyond his target. Trees, hedge, standing grain, etc., four or five hundred yards in front o the guns, so that the line of sight passes just over them, may similarly serve to deceive the enemy as to the actual position. Positions near prominent objects or points to which the range can b determined, such as telegraph lines, should be avoided.

OCCUPATION OF THE POSITION.

234. When moving forward and when taking position the seurity of the guns must never be lost sight of.

235. It has been said that the machine-gun commander rides rward to reconnoiter the designated position. Before leaving the mmand he turns it over to the senior platoon commander with structions to wait for signals or to follow at a given distance.

236. When the position has been selected and reconnoitered the achine-gun commander signals for the guns to be advanced.

237. Normally the guns will advance to position, taking advange of cover. In this case they advance as rapidly as practicable. f cover is lacking or if the guns are to go into action without delay, he commander must endeavor to surprise the enemy by the rapidity ith which he takes position and opens fire. In this case he would gnal an increase of gait to the platoon commander, who would arch the guns as rapidly as possible straight to the position. The uns are halted, if practicable, under cover, in rear of and as near s possible to the position, and unpacked. They are then carried rward to the position by hand. Platoon commanders report to he commander, who points out the position to be occupied by their uns, their objective, and gives them all information he may have athered from his reconnaissance or through his scouts. Should he ish the firing to be conducted by the chiefs of platoon without urther instructions from him, he commands *COMMENCE FIRING.*

238. The platoon commander posts his guns in the indicated osition, points out the particular element of the objective for each un, and commands: 1. *Ranging fire,* 2. *COMMENCE FIRING.* The hiefs of section range their guns independently, each, when the ange has been found for his gun, reporting to his chief of platoon: *o.* (*so and so*) *ready.* If the guns are to fire upon the same element f the objective, the chief of platoon would ordinarily range with ne gun, commanding: 1. *No.* (*so and so*) *or Sergeant* (*so and so's*) *un,* 2. *Ranging fire,* 3. *COMMENCE FIRING.* The remarks under aragraph 240 apply. When the range has been determined, the hief of platoon gives the necessary commands for the class of fire irected.

239. Should the machine-gun commander desire to range with ne platoon, he commands: 1. *Ranging fire,* 2. (*Such*) *platoon,* 3. *COMENCE FIRING.* The ranging is conducted by the chief of the indiated platoon. As soon as the range is found the chief of platoon announces the range to the machine-gun commander, who announce it to all the guns with such further commands as he may wish to give

240. Different elements of the objective may be assigned to different platoons or guns by so indicating in the command, as, 1 *Fixed fire,* 2. *First platoon at such an element,* 3. *Second platoon at suc an element.* 4. *COMMENCE FIRING.* Or, 1. *Ranging fire,* 2. *No. 1 a such an element,* 3. *No. 3 at such an element,* 4. *COMMENCE FIRIN* Similarly firing may be had at the same or different elements wit different elevations.

241. Pointers of all guns not engaged in ranging should lay thei guns on the objective, and when the point of strike can be locate should make the automatic correction of sights. This will enabl the commander to change guns in the event that the gun actuall firing is unable to get "dust."

242. In all firing the chief of platoon exercises fire direction and when necessary, fire control. Chiefs of section exercise fire control The machine-gun commander exercises fire direction in a broade tactical sense.

ADVANCE OR WITHDRAWAL WHEN IN ACTION.

243. The principles governing the selection and occupation o the original position will obtain in the advance or withdrawal t new positions.

Machine guns will always be used in pairs. When but one platoon is in action the guns will usually be advanced or withdraw simultaneously. When more than one platoon is in action th advance or withdrawal will rarely be made by all guns at the sam time; but, as a rule, guns will be advanced or withdrawn alternately by pairs, each pair of guns under cover of the fire of anothe pair or pairs.

GENERAL REMARKS.

244. The machine-gun troop will usually be with the independent cavalry. It should therefore have the mobility of a cavalr troop.

Its action is fire action with the aim of increasing the offensi and defensive power of mounted troops and of facilitating the ex cution of their strategic missions. Normally its fire will be used t augment the fire of dismounted troops; but with independent ca